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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/583,375	05/30/2000	Hideho Une	450100-02519	1327
20999	7590	04/29/2005	EXAMINER	
FROMMER LAWRENCE & HAUG 745 FIFTH AVENUE- 10TH FL. NEW YORK, NY 10151			GENCO, BRIAN C	
			ART UNIT	PAPER NUMBER
			2615	

DATE MAILED: 04/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/583,375

Applicant(s)

UNE ET AL.

Examiner

Brian C. Genco

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Applicant's arguments with respect to claims 1 and 6 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over (USPN 5,223,921 to Haruki et al.) in view of (USPN 6,573,935 to Yamada) in view of (USPN 6,657,659 to Van Rooy et al.) in view of (USPN 6,366,318 to Smith et al.).

In regards to claim Haruki discloses a color imaging apparatus comprising:

a solid-state image sensor having photosensors color-coded with three primary color filters formed like a matrix correspondingly to pixels of the solid-state image sensor, to provide three primary color signals acquired as captured image signals (e.g., Fig. 3); a three-channel signal detecting means for detecting, from the three primary color signals provided from the solid-state image sensor, an R signal, a G signal, and a B signal (e.g., Fig. 3); a two-channel variable-gain amplifying means whose channels are controllable in gain independently of one another to amplify the R and B signals (e.g., Fig. 3); and a gain controlling means for controlling, based on an output from the signal detecting means, the gains of R and B channels of the variable-gain amplifying means so that the R and B signals amplified by the variable-gain amplifying means are equal in level for an achromatic color image (e.g., Fig. 3; column 1, lines 20-38).

Haruki does not disclose four-channel outputs, a R signal acquired from R pixels in a horizontal line of R, G, R, G, ..., R and G color filters, a Gr signal acquired from the G pixels in the same horizontal line, a Gb signal acquired from G pixels in a horizontal line of G, B, G, B, ..., G and B color filters, and a B signal acquired from the B pixels in the same horizontal line, and said gain controlling means controlling the gains of Gr and Gb channels of the variable-gain amplifying means so that the amplitude difference between the luminance signal for the horizontal line of R, G, R, G, . . . , R and G color filters produced from the R and Gr signal and the luminance signal for the horizontal line of G, B, G, B, . . . , G and B color filters produced from the B and Gr-Gb signal is substantially reduced.

While Haruki discloses an RGB output, Haruki does not explicitly disclose the Bayer color filter pattern claimed. Examiner notes that it is notoriously well known in the art to utilize a Bayer color filter patter as shown by Yamada in order to provide a pattern that is more sensitive to the human visual system and is spaced symmetrically in the horizontal and vertical directions. Therefore it would have been obvious to one skilled in the art a the time of the invention to have utilized the Bayer color filter pattern so as to provide an output that is more sensitive to the human visual system and is spaced symmetrically in the horizontal and vertical directions.

Further, Yamada discloses controlling the sensitivities of the Gr and Gb pixel locations by controlling the integration time such that they are equal to each other and thus lateral stripe noise is reduced (e.g., column 8, line 46 – column 9, line 18; column 9, lines 30-60). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have

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adjusted the integration times of the Gr and Gb pixel locations such that they are equal to each other and thus lateral stripe noise is reduced.

Yamada does not disclose a four-channel output, or adjusting the gain of the Gr and Gb outputs such that the difference in the luminance signal for the Gb and Gr lines is reduced.

Van Rooy teaches that it is functionally equivalent to adjust the exposure time of an output channel as to adjust the gain of an output channel, wherein it is well within the level of one skilled in the art at the time of the invention to have selected any one of the known equivalents. As such, one skilled in the art would recognize that the combination of the references as a whole teach to have a four-channel output, i.e., R, B, Gr, and Gb, with variable gain amplifiers on each output channel so as to enable adjusting the gains of the Gr and Gb output channels such that they are equal in order to eliminate the effects of crosstalk and thus eliminate lateral stripe noise, as well as to adjust the gains of the R and B channels so as to produce an achromatic image. As a result, the difference between the luminance signals generated by Haruki would be reduced since the difference in the G signal on alternating lines would be reduced.

Examiner notes that the above combination of teachings does not disclose that the gain controlling means generates a mean value of the outputs of Gr and Gb. Rather, Yamada discloses to equalize the odd row green signal to the even row green signal, i.e., if the green signal in the odd row is lower than the green signal in the even row then increase the integration time of the odd row, wherein in combination with Van Rooy this teaches to increase the gain on of the green signal on the odd row. Conversely, if the green signal in the odd row is higher than the green signal in the even row then decrease the integration time of the odd row, wherein in

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combination with Van Rooy this teaches to decrease the gain on of the green signal on the odd row (column 9, lines 31-47 of Yamada).

Smith teaches that if each green pixel is averaged with the average of two other green pixels from opposite rows the line-to-line offset is canceled out (column 6, lines 8-12 of Smith). Examiner notes that these two methods of adjusting the green signals are functional equivalents of each other in order to cancel out the crosstalk or line-to-line offset of the green color signals wherein it is well within the level of one skilled in the art to select any of these known equivalents. Therefore, the gain controlling means generates a mean value of the outputs of Gr and Gb channels so that the difference between the luminance signals is substantially reduced.

In regards to claim 2 Haruki in view of Yamada in view of Van Rooy in view of Smith disclose the apparatus as set forth in Claim 1, wherein the gain controlling means compensates, based on the output from the signal detecting means, the gains of the channels for the Gr and Gb signals with pre-calculated fixed compensation factors (e.g., Yamada teaches that the correction for the Gr and Gb signals can be controlled by pre-calculated fixed compensation factors, namely the compensation factors are fixed for at least the time the correction is made; Yamada: column 9, lines 30-60).

In regards to claim 3 Haruki in view of Yamada in view of Van Rooy in view of Smith disclose the apparatus as set forth in Claim 1, wherein the gain controlling means detects, based on the output from the signal detecting means, an amplitude difference between the Gr and Gb signals, calculates compensation factors from the amplitude difference, and compensates the gains of the channels for the Gr and Gb signals with the compensation factors (e.g., Yamada: column 9, lines 30-60; Smith: column 6, lines 8-12).

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In regards to claim 4 Haruki discloses the apparatus as set forth in Claim 1, wherein the solid-state image sensor is a CCD (e.g., Haruki: element 2 of Fig. 3).

In regards to claim 5 Haruki in view of Yamada in view of Van Rooy in view of Smith disclose the apparatus as set forth in Claim 1, wherein the captured image signal from the solid-state image sensor is extracted via a sample & hold circuit (e.g., the color separating circuit) and AGC circuit (e.g., the gain control circuits for controlling the gain of the R, B, Gr, and Gb channels respectively), and then subjected to A/D conversion (e.g., element 22 of Fig. 3).

In regards to claims 6-10 see Examiners notes on the rejections of claims 1-5 respectively.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian C. Genco who can be reached by phone at 571-272-7364 or by fax at 571-273-7364. The examiner can normally be reached on Monday thru Friday 8:30am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Groody can be reached at 571-272-7950. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the customer service office whose telephone number is 571-272-2600.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Brian C Genco
Examiner
Art Unit 2615

April 25, 2005


James J. Groody
Supervisory Patent Examiner
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